SEQUENCE LISTING

<110> Japan Science And Technology Agency
<110> Japan as represented by President of the National Cardiovascular Center

<120> A New Peptide Having Production Activity of cAMP

<130> JA905066

<140> PCT/JP03/06641
<141> 2003-05-28

<150> JP2002-162797
<151> 2002-06-04

<160> 22

<170> PatentIn Ver. 2.1

<210> 1
<211> 38
<212> PRT
<213> Swine

<220>
<221> modified amino acid
<222> (38)
<223> glycine amide

<220>
<223> CRSP

<400> 1
Ser Cys Asn Thr Ala Thr Cys Met Thr His Arg Leu Val Gly Leu Leu
1   5   10   15

Ser Arg Ser Gly Ser Met Val Arg Ser Asn Leu Leu Pro Thr Lys Met
        20   25   30

Gly Phe Lys Val Phe Gly
        35

<210> 2
<211> 39
<212> PRT
<213> Swine

<220>
<223> CRSP-Gly

<400> 2
Ser Cys Asn Thr Ala Thr Cys Met Thr His Arg Leu Val Gly Leu Leu
1   5   10   15

Ser Arg Ser Gly Ser Met Val Arg Ser Asn Leu Leu Pro Thr Lys Met
        20   25   30

Gly Phe Lys Val Phe Gly Gly

<210> 3
<211> 679
<212> DNA
<213> Swine

<220>
<223> CRSP cDNA

<400> 3
tcaagtgtct ctgccgcttc ttccacagtg ccatcgcctg acgccaacgc tgctgcctct 60
gctccctcct ctgctccagt ccacctggtt cctgctgccc gaggggcacc atgggcttct 120
ggaaatttcc gcccttcctg gttctcagca tcctggtcct gtaccaggca ggcatgttcc 180
acacagcacc aatgaggtct gcctttggga gccctttga tcctgctacc ctctctgagg 240
aggaatcacg cctccttttg gctgcaatgg tgaatgacta tgagcagatg aaggcccgtg 300
agatgcagaa gcagagggca cagggctccg gcatcagtgt ccagaagaga tcctgcaaca 360
ctgccacctg catgacccat cggctggtgg gcttgctcag cagatctggg agcatggtga 420
ggagcaacct gttgcccacc aagatgggct tcaaagtctt tggtgggcgc cgcaggaact 480
tttggatctg agcagtggga tgattccagg aggaaggtta ctatgactct gaactctatt 540
cgtttaattt acaatgaaag caacctacta aaaatagca tggaagacat ccatgtatgc 600
atgcttctgg aaactgaaaa cactcttttc cttgaaataa actaaaacta aatgcaaaat 660
aaaatcaatg catcaatgc   679

<210> 4
<211> 126
<212> PRT
<213> Swine

<220>
<223> precursor peptide of CRSP

<400> 4
Met Gly Phe Trp Lys Phe Pro Pro Phe Leu Val Leu Ser Ile Leu Val
1   5   10   15

Leu Tyr Gln Ala Gly Met Phe His Thr Ala Pro Met Arg Ser Ala Phe
            20   25   30

Gly Ser Pro Phe Asp Pro Ala Thr Leu Ser Glu Glu Glu Ser Arg Leu
        35   40   45

Leu Leu Ala Ala Met Val Asn Asp Tyr Glu Gln Met Lys Ala Arg Glu
        50   55   60

Met Gln Lys Gln Arg Ala Gln Gly Ser Gly Ile Ser Val Gln Lys Arg
    65   70   75   80

Ser Cys Asn Thr Ala Thr Cys Met Thr His Arg Leu Val Gly Leu Leu
                85   90   95

Ser Arg Ser Gly Ser Met Val Arg Ser Asn Leu Leu Pro Thr Lys Met
            100   105   110

Gly Phe Lys Val Phe Gly Gly Arg Arg Arg Asn Phe Trp Ile
            115   120   125

<210> 5
<211> 3796
<212> DNA

<213> Swine

<220>
<223> gene CRSP

<400> 5
ctcgaggatc ctgcctcttg tttcccacaa atcctgcctt cctgtgcttg attccagctg 60
cctgaatcag accccctgct tgggcacaga atcatcaacc tgctgcgcat taacctccca 120
aaccgcactt ggacatggta gtcttagggg accggggatg ccttgtaatg ctggactctg 180
ctctacaaag atcacatagc tggggatgga gagggatgtg agcctgcgaa accgaacagg 240
taaagtttac catgacgtca aactgtcctt aaattcctgc tcactttgcg tgtgttttc 300
gttggtgccc accaacctcc ccacccccct c ccacccccgc catcaatgac ctcaatgcaa 360
atacaagtgg ggtggtcctg ttggatgctc caggttctgg acgcaagtag tgacacaatc 420
ctggggctca ggatctttcc tctcattggt tgcctggagc tctgggacca ccccagattc 480
agagcggcgg gaataagagc agctgctggt gcggggaagg gttagaggca ctaccacct 540
caagtgtctc tgccgcttct tccacagtgc catcgcctga cgccaacgct gctgcctctg 600
ctccctcctc tgctccagtc cacctggttc ctgctgcccg gtaagcccgg agattcctgc 660
taagctgtgg ttctgtttct ctctccctct cctcccttcc ctctctctcc attggatttt 720
cttagctgat ctcttttccc gtctcaaagt tcctgtccac ttctctctgg gtctcttcat 780
cctgtaatat gccttactgc gcaattcatt ctaggctcct ttcacaggta actctggatg 840
gtctcagttc ggggattccc tgctctactc ttcctgagct gagctgggct ccagtcttgt 900
ccccgcagca gacgtgctta ggtccgtgtt gggattttgg agctctccag gcacttcagg 960
gagaggagga tgcaggaata gctttgagca gaagaaactt tcatggatcc catctcctct 1020
tacctacaag gatcgctgga aatggggtcg ggacctggga cagtgcaaat gggtggcaaa 1080
taggtgcaat gactgagggg aaagtagcta ttaaacgcaa gccccagttg aaggttctgg 1140
gaactccccc tcccgcaccg ccaccccatt taatcttggg tcccaattta aggctgtacc 1200
agcttgtttc ttacagggtg ctctttgcca gagtatggag cagctggaca gtaaaatttg 1260
gttcttcagt ttctcaggga ttccaactgc agagatatgt cctcccaact cccttcccc 1320
ccagccaggt ataagcaaaa atcaggcatc aggagagatg ctgatgggtt gcactatggg 1380
aaaagctgtg gtgacaggta ctgcgagtct gtcctccagg agtcccggcc aacaggttga 1440
aggtgagagt gtgggtgtgc tgggcagggg gctatggacg gagacctcct cacccagttg 1500
tcctgctagg cttctttgct aaaccaaaca tgttgcaggc tcactggatc ttccagcagt 1560
ccacttggct gaggaggaaa tgatggtgaa aggaaaggac acgagcagcc tgaagccagg 1620
aagccaggga gttggaggca gaggcaggag cagagcccag gtctgtgggc tcaatgaact 1680
tggaactgct acaggtggtg acattgttct tcccttgcag aggggcacca tgggcttctg 1740
gaaatttccg cccttcctgg ttctcagcat cctggtcctg taccaggcag gcatgttcca 1800
cacagcacca atgaggtaag acagccctgc caacaagcac actcacttga tgagaatgta 1860
atataaacgt gtatataaat ttattataag gtggctctgt agaacaatgg atagtgcctt 1920
gcgctcctat aagtttatca taagctttat gtgtacacaa agtttgtaaa tagacataag 1980
atatacagta ctcatgattg taaattttat ataacttatc aaacctcaca gcatgctttt 2040
ttgttttcat caaatatttg tacctttagc acacgtatat gctcatatta ccataattta 2100
agaaatggat tgtatccaat ttgccaaata ctttgctagt aaatttgtta ttaaatctga 2160
tatgggatct acacatctca tttttcacct tcattcaaac tgcattaagc taaaattatt 2220
ttcccattca aactatcaga aaccaggcaa cctggctgtt tatcctgggg aggggcaggc 2280
aggagatcag aacctgtttt taggcttgct tcccctcctt aggtctgcct ttgggagccc 2340
ttttgatcct gctaccctct ctgaggagga atcacgcctc cttttggctg caatggtgaa 2400
tgactatgag cagatgaagg cccgtgagat gcagaagcag agggcacagg gctccgggta 2460
aggttccctg cccaaggaca acagggcatc cctttcttcc tctggtcagg cccaggaagg 2520
catatttaa agtcactttt gagttttctg accccctgg acatgtctgt gggatgatta 2580
tggcatttcc cctgacggcc taggattttc tgctgtgatg acctttctta gcagaaatac 2640
tcaaggttca ctggtcctct caaggcagta gtcttccatg acgattctgt cgtacagcac 2700
ctgcactcaa cctctcactg acgggccttt tctttcttta tcccacaaat cagcatcagt 2760
gtccagaaga gatcctgcaa cactgccacc tgcatgaccc atcggctggt gggcttgctc 2820
agcagatctg ggagcatggt gaggagcaac ctgttgccca ccaagatggg cttcaaagtc 2880
tttggtgggc gccgcaggaa cttttggatc tgagcagtgg gatgattcca ggaggaaggt 2940
gactgccctt tttgtacctt cgggtgggag gacagaggac tgggtattgc aggggtgcat 3000
tccacaccct aaccctctgt gagcgcatgg gggtaaaacc tccacatggc aaggtgccca 3060
caccagtgtc tggagaaagg actgataatc cctataacta aaacattggg ctctttctct 3120
ctgtttctcc agtctctccc tgtgacactg acatcatctg ccaggaaata tagaccctgt 3180
ttacttaaaa cactgttccc tgggtattaa ttggggtcca gctctagcat tagaatttga 3240
aaggtaatga ccctacccct tggagcata ccttacaatg ttatgaactt ggagcataga 3300
ctcggattca aatactgtgt ctgtcttcca ctaactgtga ccataggcaa gtatgcctct 3360
gagcctcagc ttctccttgt aacttgaagg caacaatagt atcctcaata taaaaattaa 3420

(3)

ttagtataac atatgacaag agcctgttaa ctaagaatta ataacattct gttacttttt 3480
tccctcctag gttactatga ctctgaactc tacttcgttt aatttacaat gaaagcaacc 3540
tactaaaaaa tagcatggaa gacatccatg tatgcatgct tctggaaact gaaaacactc 3600
ttttccttga aataaactaa aactaaatgc aaaataaaat caatgcatca atgcagttac 3660
cttgtgtgca tcttttgtgt atatgattct ataatatgat gcatgtctca ttaggtttaa 3720
tggtagcaaa tctggcccct gtcagccaac ctgttggtgg gggcagctct gctaaacctc 3780
agggtcacat gaattc   3796

<210> 6
<211> 40
<212> PRT
<213> Bos sp.

<220>
<223> BosCRSP

<400> 6
Ala Cys Asn Thr Ala Thr Cys Met Thr His Arg Leu Ala Gly Trp Leu
1   5   10   15

Ser Arg Ser Gly Ser Met Val Arg Ser Asn Leu Leu Pro Thr Lys Met
        20   25   30

Gly Phe Lys Ile Phe Asn Gly Pro
        35   40

<210> 7
<211> 649
<212> DNA
<213> Bos sp.

<220>
<223> BosCRSP cDNA

<400> 7
tgtctctgcc acttctgcca gactgccact gcctgctgcc aaagctactg ctgctgctcc 60
ttcctctgct cccagccacc tggtgccggc tgtcagagag gtgtcatggg cttctggaag 120
ttccccccat tcttggtcct cagcatcctg gtcttgtacc aggcaggcat gtttcatgca 180
gcaccattca ggtctgtctt tgatgggcgt tttgatcctg ctaccctgga tgaggaggaa 240
tcgcgcctcc tactggctgc gatggtgaat gactacgagc agatgagggc ccgggagtcg 300
gagaaggctc agaagaccga gggctcccgc atccagaaga gagcctgcaa cactgccacc 360
tgcatgaccc atcgcctggc aggctggctg agcagatctg ggagtatggt gaggagcaac 420
ttgctgccga ccaagatggg tttcaagatc ttcaatgggc cccgcaggaa ctcctggttt 480
taaacagtga aatgacgctg ggaataaggt caccaggaag ctgaactcta cttttagttt 540
gcatgaaggc accttacaaa aaaagaaaat agcatggaag atacccatgt atgcatgctt 600
ctcgatattg aaaacattct tcttttccct gaaataaact aaatgcaga   649

<210> 8
<211> 125
<212> PRT
<213> Bos sp.

<220>
<223> precursor peptide of BosCRSP

<400> 8
Met Gly Phe Trp Lys Phe Pro Pro Phe Leu Val Leu Ser Ile Leu Val
1   5   10   15

Leu Tyr Gln Ala Gly Met Phe His Ala Ala Pro Phe Arg Ser Val Phe
                                (4)

Asp Gly Arg Phe Asp Pro Ala Thr Leu Asp Glu Glu Glu Ser Arg Leu
   35   40   45

Leu Leu Ala Ala Met Val Asn Asp Tyr Glu Gln Met Arg Ala Arg Glu
  50   55   60

Ser Glu Lys Ala Gln Lys Thr Glu Gly Ser Arg Ile Gln Lys Arg Ala
65   70   75   80

Cys Asn Thr Ala Thr Cys Met Thr His Arg Leu Ala Gly Trp Leu Ser
        85   90   95

Arg Ser Gly Ser Met Val Arg Ser Asn Leu Leu Pro Thr Lys Met Gly
    100   105   110

Phe Lys Ile Phe Asn Gly Pro Arg Arg Asn Ser Trp Phe
   115   120   125

<210> 9
<211> 38
<212> PRT
<213> Canis sp.

<220>
<223> CanisCRSP

<400> 9
Ser Cys Asn Ser Ala Thr Cys Val Ala His Trp Leu Gly Gly Leu Leu
 1   5   10   15

Ser Arg Ala Gly Ser Val Ala Asn Thr Asn Leu Leu Pro Thr Ser Met
   20   25   30

Gly Phe Lys Val Tyr Asn
   35

<210> 10
<211> 686
<212> DNA
<213> Canis sp.

<220>
<223> CanisCRSP cDNA

<400> 10
tctgccacat ccacggtgcc atcgcctgac atcggacgcc aacactgcca cagctgccgc 60
cgcctgtgct ccgagccacc ggctgcctgc agacagagaa gcgtcatggg cttctggaag 120
ttctcccctt tcctggttct cggcatcctg gcgctgtacc aggtgggctt cctccaggca 180
gcaccattca ggtctgcttt ggaaaatcct ccagactctg gtgtgcgcaa tgaggaggaa 240
ttgcgcctcc tcctggctgc agtgatgaag gactatatgc agatgaagac tcatgagctg 300
gagcaggagc aggagactga gggctccagg gttgctgtcc agaagagatc ctgcaactct 360
gccacctgtg tggcccattg gctgggaggc ttgctgagca gagccggaag tgtggcaaac 420
accaacttgc tgcccaccag catgggcttc aaggtctaca atcgacgccg cagggaactt 480
aaggcttaag cagtgacatg accccaggaa gaaggtcacc atgaagtgaa ctctacttct 540
cttaacttct aatgaaaaca acttatagaa tgcagagcat ggaagacaca tacatatgca 600
tgcttactat taaaacattg tgtcttgttt gaaataaagt aaaactaaat aaagagaata 660
aaatcataaa aaaaaaaaaa aaaaaa   686

<210> 11
<211> 127
<212> PRT
<213> Canis sp.

<220>
<223> precursor peptide of CanisCRSP

<400> 11
Met Gly Phe Trp Lys Phe Ser Pro Phe Leu Val Leu Gly Ile Leu Ala
 1   5   10   15

Leu Tyr Gln Val Gly Phe Leu Gln Ala Ala Pro Phe Arg Ser Ala Leu
         20   25   30

Glu Asn Pro Pro Asp Ser Gly Val Arg Asn Glu Glu Glu Leu Arg Leu
         35   40   45

Leu Leu Ala Ala Val Met Lys Asp Tyr Met Gln Met Lys Thr His Glu
         50   55   60

Leu Glu Gln Glu Gln Glu Thr Glu Gly Ser Arg Val Ala Val Gln Lys
 65   70   75   80

Arg Ser Cys Asn Ser Ala Thr Cys Val Ala His Trp Leu Gly Gly Leu
             85   90   95

Leu Ser Arg Ala Gly Ser Val Ala Asn Thr Asn Leu Leu Pro Thr Ser
             100   105   110

Met Gly Phe Lys Val Tyr Asn Arg Arg Arg Arg Glu Leu Lys Ala
         115   120   125

<210> 12
<211> 37
<212> PRT
<213> Swine

<220>
<221> modified amino acid
<222> (37)
<223> Leucine amide

<220>
<223> CRSP-2

<400> 12
Ser Cys Asn Thr Ala Ser Cys Val Thr His Lys Met Thr Gly Trp Leu
 1   5   10   15

Ser Arg Ser Gly Ser Val Ala Lys Asn Asn Phe Met Pro Thr Asn Val
         20   25   30

Asp Ser Lys Ile Leu
         35

<210> 13
<211> 690
<212> DNA
<213> Swine

(6)

<220>
<223> CRSP-2 cDNA

<400> 13
ctcaagtgtc tctgccgctt cttccacagt gccatcgcct gacgccaacg ctgctgcctc 60
tgctccctcc tctgctccag tccacctggt tcctgctgcc cgaggggcac catgggcttc 120
tggaaatttc cgcccttcct ggttctcagc atcctggtcc tgtaccaggc aggcatgttc 180
cacacagcac ccgtgagatt gcctttggag agcagctttg attctgccac tctcacagag 240
gaggaagtgt cccttctact ggttgcaatg gtgaaggatt atgtgcagat gaaggccact 300
gtgctggagc aggagtcaga ggacttcagc atcactgccc aggagaaatc ctgcaacact 360
gctagctgtg tgacccacaa gatgacaggc tggctgagca gatctgggag cgtggctaag 420
aacaacttca tgcccaccaa tgtggactcc aaaatcttgg gctgacgccg cagagagcct 480
caggcctgag ctgtgaaatg actccacaaa gaaggtcacc aaggaactga actctatttc 540
ttttaatctg caatgaaagc aatttatttg aaaaatagca tggaaaacac acatatatgc 600
atgcttcttg cttgaaatac agcttttagc ttgaaataaa ctaaaactaa atgcagaata 660
aaatcattgc agctacctga aaaaaaaaaa   690

<210> 14
<211> 117
<212> PRT
<213> Swine

<220>
<223> precursor peptide of CRSP-2

<400> 14
Met Gly Phe Trp Lys Phe Pro Pro Phe Leu Val Leu Ser Ile Leu Val
1   5   10   15

Leu Tyr Gln Ala Gly Met Phe His Thr Ala Pro Val Arg Leu Pro Leu
        20   25   30

Glu Ser Ser Phe Asp Ser Ala Thr Leu Thr Glu Glu Glu Val Ser Leu
        35   40   45

Leu Leu Val Ala Met Val Lys Asp Tyr Val Gln Met Lys Ala Thr Val
    50   55   60

Leu Glu Gln Glu Ser Glu Asp Phe Ser Ile Thr Ala Gln Glu Lys Ser
65   70   75   80

Cys Asn Thr Ala Ser Cys Val Thr His Lys Met Thr Gly Trp Leu Ser
            85   90   95

Arg Ser Gly Ser Val Ala Lys Asn Asn Phe Met Pro Thr Asn Val Asp
            100   105   110

Ser Lys Ile Leu Gly
        115

<210> 15
<211> 7673
<212> DNA
<213> Swine

<220>
<223> gene CRSP-2

<400> 15
ggatccacta gttctagata aaatggacaa atacctagaa acagaagacc taccaagatg 60
gaaggatgaa gaaatagaaa attcaaatac acctatgact aggaaggaga atgaagcatt 120

(7)

aatccaaaat cttccaacaa agaaaagccc tggatacgat ggcctcattg gtgaatagta 180
ccagacattt aaagaaaacg aataccaatc cttgtcaaac ttttccaaaa acctgaagag 240
aaaggacaca ccctaaccta ttctatgagg caggccaaca ttactctgat accaaagatg 300
gagaaagatt ctgcaaggag aaaacccta cagacaaaat cctttatgac atggatgtgg 360
aaaccctcaa cagtatgcta gggaattgaa ttcagaagcg tattaaaagg atcctacaac 420
atgaccaagt gggatgaatt tctggaatgc aaggatgatt caaaatatga aaattgatca 480
aagtgttata tcacaataat ggaatgtagg gaaaaacaca cctgattatt tccactgata 540
cagaaaatta tttagtaaaa ttcaatacct tttcaggatt aaaaacaaaa actaggtata 600
gaaggagact gcctcagcac aatacaacta tatatgaaaa accaacacca acaccataat 660
ccagggtgga aaactgaaag cttttcccct aagatctgga agaaaatgga aaaaaatttt 720
taagaatttt cagacagatt tgggtctctg gtacactctg agaaatcatc ttttagaatt 780
tttttttttt aaaaataagc acaagaattt catttaaaag aagggaaata acatagcctt 840
cagagtttat caggaggtgt aattttttttt tccacactag attgtggcta cctgatgcta 900
attttgaggt ttaaacataa tgaaataaga ttgtacagcc aagtgccagc tagtcatgga 960
acttttacct cagtactgtt tagtgcttca gtcctaagaa gtttcaggga gggctgcgtg 1020
caatacaagt aatcggtact tgctgaaggt ctaaaatttc gagtgcactt ggtaaatcag 1080
ggatgggcgc agaggagact ggttctgtaa ctcagactag tgaaccctag aatttagaaa 1140
gggtactttt gtgctccaag caaatcctgt tctacctaac taggtccaaa tgctctgcag 1200
gctgtagtta gagccctctc atagcaggga gactgccttg gtgaatctgc cagaggaaat 1260
gaatttccat tcacattcat tcaacaaaca ttgggcgagt gccacctcat gtgcaaaaca 1320
tggtgctaag tgctaaagaa aagatgttgt tttgtaaact tacccgcagc tcagagccag 1380
gacttcttgg aaagtcagag gacttgagga aggagttcat ctcagcccct ccctcactgg 1440
agagactggc ttttctttcc aagtaaagct taaaactgct ggaggctaag ttagcaccct 1500
ctgggggcag accctgattc ctgcctctca tccccagccc tttgtgtgtg ggcgccaaag 1560
atttctgagt gaggaatgaa tgttggcttt gaacaggaaa ggcacaagtg gcagccaagg 1620
gtagaatgct gagcctacaa attaacatag ttacaaattt gtcttctaaa ggagtcgttt 1680
cttagccata gtgcagccac ctttgcattg atcaaaactg tggttcttcc aatgaaaaaa 1740
gacatcccca gacacacata cttacaaatg atttcagaag attgataggt cggaaatctc 1800
aggttttgga tttttatttgc aaaagcgttt tgcgcctgag ttttaaactt tttttttttt 1860
tttttttttt tgtattttttt cacttctagg gcggcttcgg cggcatatgg aaattcccag 1920
gctaggggtc taataggcgc catagccacc ggcctacgcc agagctactg caacgctgga 1980
tccgagccgc atctgcaacc tacaccacaa ctcacggcaa tgccggatcg ttaacccact 2040
gagcaaggcc agggatcgaa cccgcaacct catggttctt actcagattc gttaaccact 2100
gcgccacgac ggccactcca acctaccaga ctcttaatta agtagcagag tccaatttac 2160
atgccgcacc acatctgtta ccccgagtta gcgaacttgg tcttggaact aactcctcac 2220
ggaaagccaa gccgagtact cataattata gtgctgaacc cccaaaccct ggtctggcct 2280
gtgcacccaa tttttgcttg tagtagaaac caggatttac ggagcccgag cagtccgcca 2340
tcctgaactc ttctctttct caccttgcct tcatcctgga gtgcacctgc cctctatgaa 2400
ccagtttttc cgttcccttg gtctcccgat ccgttgtcta tcctgaggag agcgagatgc 2460
aagcaccega ttccctagcc ccaatatttt attctcttgc gaaggagaaa agttgaataa 2520
gggtatcttg taaatgagat gttccgagtc cagagagcac aaaccggcaa ggggaacaga 2580
tgtgccgcga ggcaggtgtg cggaaagata tagagaaggc tcaggttcgg acctgtggct 2640
caggtcacac tcatggcaga gttcggttta atttcggctc tgcctggggg aaccacttaa 2700
ctggggtcct tgctgccctc caccggcccc cgatgctgtt gcagcgtttg ccgcgctgga 2760
gggtctgtac aggctgctgc ggtttatcgc tgtgtgctca gacacggtga tcctgagcag 2820
catccgaact ggattggggt agatgtgggc acagggctgg aatcacaggt cactggaaca 2880
tcttggcaaa cagcagccgg aagcaagggg cagctgggca aatggttctg ggacattgat 2940
gggcttagat gatgaatggt ggggctggag gtcggcttgg cggcttggga agcatctatg 3000
ccgtgcacgt ccctgcccaa gcccagtagg gcaccatctt tccccatatg gtggaccgac 3060
cacccagcgc gactccagac atccgcacag aggtgggggat tgggcaaatg gatcgcgatc 3120
gcacagaatc ccctctgcac ttccctggta agctcttctc gatccctccc tgggtggaga 3180
gcaggtacat ggctactaat gataccactc cttgaagacg ggaatatgat gccccgttcc 3240
aaaaattaat atattgaggt gctagaagac actagcccga tgatcttact acctagaaaa 3300
ggcacagctg gaacaaagtt tccgtgtgac aaagactgtg atcctgcctc ttgtttccca 3360
caaatcctgc cttcctgtgc ttgattccag ctgcctgaat cagaccccct gcttgggcac 3420
agaatcatca acctgctgcg cattaacctc ccaaaccgca cttggacatg gtagtcttag 3480
gggaccgggg atgccttgta acgctggact ctgctctaca aagatcacat agctggggat 3540
ggagagggat gtgagcctgc gaaaccgaac aggtaaagtt taccatgacg tcaaactgtc 3600
cttaaattcc tgctcacttt gcgtgtgttt ttcgttggtg cccaccaacc tccccacccc 3660
ctcccacccc cgccatcaat gacctcaatg caaatacaag tggggtggtc ctgttggatg 3720
ctccaggttc tggacgcaag tagtgacaca atcctggggc tcaggatctt tcctctcatt 3780
ggttgcctgg agctctggga ccaccccaga ttcagagcgg cgggaataag agcagctgct 3840
ggtgcgggga agggttagag gcactaccca cctcaagtgt ctctgccgct tcttccacag 3900
(8)

tgccatcgcc tgacgccaac gctgctgcct ctgctccctc ctctgctcca gtccacctgg 3960
ttcctgctgc ccggtaagcc cggagattcc tgctaagctg tggttctgtt tctctctccc 4020
tctcctccct tccctctctc tccattggat tttcttagct gatctctttt cccgtctcaa 4080
agttcctgtc cacttctctc tgggtctctt catcctgtaa tatgccttac tgcgcaattc 4140
attctaggct cctttcacag gtaactctgg atggtctcag ttcggggatt ccctgctcta 4200
ctcttcctga gctgagctgg gctccagtct tgtccccgca gcagacgtgc ttaggtccgt 4260
gttgggattt tggagctctc caggcacttc agggagagga ggatgcagga atagctttga 4320
gcagaagaaa ctttcatgga tcccatctcc tcttacctac aaggatcgct ggaaatgggg 4380
tcgggacctg ggacagtgca aatgggtggc aaataggtgc aatgactgag gggaaagtag 4440
ctattaaacg caagccccag ttgaaggttc tgggaactcc ccctcccgca ccgccacccc 4500
atttaatctt gggtcccaat ttaaggctgt accggcttgt ttcttacagg gtgctctttg 4560
ccagagtatg gagcagctgg acagtaaaat ttggttcttc agtttctcag ggattccaac 4620
tgcagagata tgtcctccca actccccttc cccccagcca ggtataagca aaaatcaggc 4680
atcaggagag atgctgatgg gttgcactat gggaaaagct gtggtgacag gtactgtgag 4740
tctgtcctcc aggagtcccg gccaacaggt tgaaggtgag agtgtgggtg tgctgggcag 4800
ggggctatgg acggagacct tctcacccag ttgtcctgct aggcttcttt gctaaaccaa 4860
gcatgttgca ggctcactgg atcttccagc agtccacttg gctgaggagg aaatgatggt 4920
gaaaggaaag gacacgagca gcctgaagcc aggaagccag ggagttggag gcagaggcag 4980
gagcagagcc caggtctgtg ggctcaatga acttggaact gctacaggtg gtgacattgt 5040
tcttcccttg cagaggggca ccatgggctt ctggaaattt ccgcccttcc tggttctcag 5100
catcctggtc ctgtaccagg caggcatgtt ccacacagca cccgtgaggt aagacagcac 5160
tggtggcagt gctctcgctt cccacggccc ccggaatcat atagttctgt attgtgagtt 5220
gtgctgtggt gagtctggct cttggtgggc ttctgtgtat aggggggtgtg gggtcctaat 5280
gtatgaatat agtcatgtat ataagtttat tataaatatt ttgtgatcca agataaatatc 5340
acaaagttta caaataaata gaagatatac agtattcact ataaatttct aaactcactg 5400
aaccttacag catgttttttg ttgcttttta tgaaatgtt ataactttag caaacctata 5460
tagtaattta gccataattt gagcaatgaa ttgcattcta attaagtaat ttgtcaataa 5520
atttgttatt aaatctgaaa ggtaatctat acaatttctc accctctttc aaattatatt 5580
aatatgaaac cattttcata ttcaaactat catttaattt ttaataatgg ctgtatttaa 5640
cactaagctc atacaattcc tgaagatcta accatcagct ttcaaaagcc tacatgatgc 5700
actttcagca gaactacttt gtggacaccc cagagcctaa ctcatggtga agcagcattt 5760
ttggatgaac actagcctta tgtcctgacc gttgagaatt tcatcagcct tattctcaga 5820
ggaagtggca gaaaccagga aatctggctg cttatcctag ggctgtggta ggctcagagc 5880
gcatgttggg cttgctttcc cttcccagat tgcctttgga gagcagcttt gattctgcca 5940
ctctcacaga ggaggaagtg tcccttctac tggttgcaat ggtgaaggat tatgtgcaga 6000
tgaaggccac tgtgctggag caggagtcag aggacttcag gtcagtcttt gcacccctcc 6060
cagaatatgc cttaccctct ccctagagta ccaggaaggc atatccttaa gaatgagatt 6120
tgttatagtg ccataagcct tgatgtccag tctcataagc cttggtttat ttttagttta 6180
ttacacagga gagattgtct attacagttc tgatttccag gtccagtaat gcagagccac 6240
ctttgggttt tctgacaccc ctgaaaatgt ctatggggag tgatgatgca tttttcccaaa 6300
agccctatgg ttttctgttg ggattttgtg tttagcagaa acatttcagg ttcactggtc 6360
cctctcagag ctgtaatttt ccactgatgg tcagtcctgg ggggaatcac ttgccctcaa 6420
gctgtcattg gcaggccttc tctttgtctc catcctgaaa atcagcatca ctgcccagga 6480
gaaatcctgc aacactgcta gctgtgtgac ccacaagatg acaggctggc tgagcagatc 6540
tgggagcgtg gctaagaaca acttcatgcc caccaatgtg gactccaaaa tcttgggctg 6600
acgccgcaga gagcctcagg cctgagctgt gaaatgactc cacaaagaag gtgactgctc 6660
tagaacatgg gatagcaggg caaatggctg ggtatttcag gggtgttggc tacactctaa 6720
ccctccctga gcctgtactg taaaaaaaaa tccataatga agttgctgac cccattatcc 6780
tcagaaagaa aagagaatcc taatagccaa aaccccctata acttaggttc atttctattt 6840
ttttccagtg tctcccagtg actctgaggt catctgtcag gaaacataga ttctattctt 6900
ttttctttc ttttttggcta cacccaaggc atgtgaaagt ttttgggcca gggattgaat 6960
ctgaaccata gctgtgacct atgcagtacc tgtggcaaca ctggatcctt aacccaatgt 7020
accacatcag gaactcctag gtcctattat ttaaaacact gttccctgca gttataattg 7080
tgattattct agtttttgag tttgaaaggt aatgatctta tccagtgagt ttgaagtata 7140
actacaatgt cacatatatc tgaattcaga gcattgactt ggtttcaaat gcgatgtctg 7200
tcttccacta actatacaac catgggccag accctctctg aacctcagtt ctacatgaaa 7260
ctttaaggca acaataatat ttacctgtta tcattaaatat aaaaagtaac tgagataatt 7320
catggtaaga gcctcactat taataagtaa taatattcta gctcttattt ttttttctcc 7380
taggtcacca aggaactgaa ctctatttct tttaatctgc aatgaaagca atttatttga 7440
aaaatagcat ggaaaacaca catatatgca tgcttcttgc ttgaaataca gcttttagct 7500
tgaaataaac taaaactaaa tgcagaataa aatcattgca gctacctgat atgtatcatt 7560
ttaatatttg attctgtatt ctataagtat gactcatgtc tcgctggctt atctggtagc 7620
aaatctggac cctgtcagcc aacctgttgg tggtggcagc tctgctaaac ctc   7673

<210> 16
<211> 37
<212> PRT
<213> Swine

<220>
<221> modified amino acid
<222> (37)
<223> Leucine amide

<220>
<223> CRSP-3

<400> 16
Ser Cys Asn Thr Ala Ile Cys Val Thr His Lys Met Ala Gly Trp Leu
1   5   10   15

Ser Arg Ser Gly Ser Val Val Lys Asn Asn Phe Met Pro Ile Asn Met
            20   25   30

Gly Ser Lys Val Leu
        35

<210> 17
<211> 685
<212> DNA
<213> Swine

<220>
<223> CRSP-3 cDNA

<400> 17
gcccagctta cgtctccttt ctccgccagt gccatcacct gccaccagcg cggttgttgc 60
ttctcccact tgggctccaa gctacctggt tcctgcatcc agaggggcac catgggcttc 120
tggaagttcc cccccttcct gatcctcagc atcctggtcc tgtaccaagc aggaatgctc 180
catgccgcgc cattcaggat ggctttggga agcagctttg attctgccac actcacggaa 240
gaggaaatgt ccctcctact ggttgcaatg gtgaaggatt atgtgcagat gaaggccact 300
gtgctggagc aggagacaga ggacttcagc atcaccaccc aggagagatc ctgcaacact 360
gccatctgtg tgacccacaa gatggcaggc tggctgagca gatctgggag cgtggttaag 420
aacaacttca tgcccatcaa catgggctcc aaagtcttgg gccggcgccg cagacagcct 480
caggcctgag ctgtgaaatg actctaaaaa gaagttgaac tcaagttgct ttcactgcaa 540
agttgctttc cctgcaaatt aaaagaacca atttgaaaaa tagcatggaa gacacacata 600
tatgcatgct tcttgcttga aatacaactt tttgcttgaa acaaactaaa cctaaatgca 660
gaataaaatc attgcagtta cctga   685

<210> 18
<211> 125
<212> PRT
<213> Swine

<220>
<223> precursor peptide of CRSP-3

<400> 18
Met Gly Phe Trp Lys Phe Pro Pro Phe Leu Ile Leu Ser Ile Leu Val
1   5   10   15

Leu Tyr Gln Ala Gly Met Leu His Ala Ala Pro Phe Arg Met Ala Leu
            20   25   30

(10)

Gly Ser Ser Phe Asp Ser Ala Thr Leu Thr Glu Glu Glu Met Ser Leu
    35   40   45

Leu Leu Val Ala Met Val Lys Asp Tyr Val Gln Met Lys Ala Thr Val
    50   55   60

Leu Glu Gln Glu Thr Glu Asp Phe Ser Ile Thr Thr Gln Glu Arg Ser
65   70   · 75   80

Cys Asn Thr Ala Ile Cys Val Thr His Lys Met Ala Gly Trp Leu Ser
                85   90   95

Arg Ser Gly Ser Val Val Lys Asn Asn Phe Met Pro Ile Asn Met Gly
            100   105   110

Ser Lys Val Leu Gly Arg Arg Arg Arg Gln Pro Gln Ala
            115   120   125

<210> 19
<211> 33
<212> PRT
<213> Swine

<220>
<221> modified amino acid
<222> (33)
<223> Serine amide

<220>
<221> modified amino acid
<222> (1)
<223> pyroglutamic acid

<220>
<223> CT-2

<400> 19
Glu Cys Asn Asn Leu Ser Thr Cys Val Leu Gly Thr Tyr Thr Trp Asp
 1   5   10   15

Val Asn Lys Phe Tyr Ala Phe Pro Leu Thr Thr Thr Gly Ile Arg Val
        20   25   30

Ser

<210> 20
<211> 802
<212> DNA
<213> Swine

<220>
<223> CT-2 cDNA

<400> 20
gcccagctta cgtctccttt ctccgccagt gccatcacct gccaccagcg cggttgttgc 60
ttctcccact tgggctccaa gctacctggt tcctgcatcc agaggggcac catgggcttc 120
tggaagttcc cccccttcct gatcctcagc atcctggtcc tgtaccaagc aggaatgctc 180
catgccgcgc cattcaggat ggctttggga agcagctttg attctgccac actcacggaa 240
gaggaaatgt ccctcctact ggttgcaatg gtgaaggatt atgtgcagat gaaggccact 300
(11)

```
gtgctggagc aggagacaga ggacttcagc ctggacagct ccagagctaa gcagtgcaat 360
aatctgagta cctgtgtgct gggaacatat acatgggacg tcaacaagtt ttatgcattc 420
cccttaacta caactgggat tagagtatct ggcaagaaat gggtcagggc cagagtctca 480
gagaaagtcc attatccctc aaggcagcat accctaaggt gcttaagaag gccccaccc 540
ctcctccttt ctagttcctc tcctagaatt tgcatgtgtt cttctctggt tgctctctga 600
gctgctatca gcagctttcc ttgtggccat ggatgtctgg aatatcagag aggaggtggg 660
gggtgggggc aggcaggcca gaagaaaatc actcaggaat agattaggag agaatgggca 720
gccctgtgag tgcctgtgga tttcacagca gagcttctca gtcctgcttc tgaacatgct 780
tttcactagg gaataaaagt at                                      802
```

<210> 21
<211> 162
<212> PRT
<213> Swine

<220>
<223> precursor peptide of CT-2

<400> 21

```
Met Gly Phe Trp Lys Phe Pro Pro Phe Leu Ile Leu Ser Ile Leu Val
 1               5                  10                  15

Leu Tyr Gln Ala Gly Met Leu His Ala Ala Pro Phe Arg Met Ala Leu
            20                  25                  30

Gly Ser Ser Phe Asp Ser Ala Thr Leu Thr Glu Glu Glu Met Ser Leu
        35                  40                  45

Leu Leu Val Ala Met Val Lys Asp Tyr Val Gln Met Lys Ala Thr Val
    50                  55                  60

Leu Glu Gln Glu Thr Glu Asp Phe Ser Leu Asp Ser Ser Arg Ala Lys
65                  70                  75                  80

Gln Cys Asn Asn Leu Ser Thr Cys Val Leu Gly Thr Tyr Thr Trp Asp
                85                  90                  95

Val Asn Lys Phe Tyr Ala Phe Pro Leu Thr Thr Thr Gly Ile Arg Val
               100                 105                 110

Ser Gly Lys Lys Trp Val Arg Ala Arg Val Ser Glu Lys Val His Tyr
            115                 120                 125

Pro Ser Arg Gln His Thr Leu Arg Cys Leu Arg Arg Pro Pro Pro Leu
    130                 135                 140

Leu Leu Ser Ser Ser Ser Pro Arg Ile Cys Met Cys Ser Ser Leu Val
145                 150                 155                 160

Ala Leu
```

<210> 22
<211> 7142
<212> DNA
<213> Swine

<220>
<223> gene of CRSP-3 and CT-2

<400> 22

(12)

taccgggccc cccctcgagg tcgacggtat cgataagctt gatatcgaat tcctgcagcc 60
cgggggatcc ttaaccaact gagggaggcc agggattgaa ctgcgccctc atggatacta 120
gtccggtttg ttacacctca gcaacgggaa cccccctggt cactttgaag agggttttca 180
tacagatcct cccacctccg ctatcagtga cctcaatgcg aatacaagtg cggtggttct 240
gttaaattct ccaggttccg gaagcaagta ccgacataat cctcttgggg ctcaggattt 300
ttcccctcat tggttgcctg gagttccagg accaccctgg attcacagca gcgggaataa 360
gagcagctgc tggtgctgag aggcattaga agcactgccc agcttacgtc tcctttctcc 420
gccagtgcca tcacctgcca ccagcgcggt tgttgcttct cccacttggg ctccaagcta 480
cctggttcct gcatccaggt aagtccaaag attctgctta gctgtgattc tatttcttct 540
ctccctctcc tcccctccat ttctctccca ttacttttcc ttgccggtct cagaggctct 600
atccatttcc ctcggagttc cttcatcact caatctatta cgcgatttat ctcggggtcc 660
tttaacaggt aacactaaac ggtctcagtt ccagacactg agtctggctc cagttttgcg 720
gtctcctgcc gcatatgtgc ttaggttaat ctcaggaagc tggagcttcc tcaagcaatg 780
cgggctgagc agaacgcaga atatctttgt gtagaccgtg agctcaggga aaccctcttg 840
tgcctagctg tctgcgggaa atagactcat tttggaatgg attcggaact tagaccaggg 900
gaagcgggtg gcaaatagag caaagactg aggggcaggg agccattcaa ctgcaagtcc 960
tagctgccag tttggggagt ttttggttg ttttttctc cccagtttaa gtcctgtgtc 1020
ctaatttaag attccaccag cttgttttt acaggtact ctttgccaaa gtttgaagca 1080
gctgagcagt agaatttggt tcttcagttt ctcagtgatt ctaaccacag agatatgtcc 1140
tcccaatccc cctcccctgc cagctatgag caaaagcctg gttcctggaa gacaactctg 1200
ggttgcatta tgtgaaaagc tgtggtggct tactccgagt ttgtcctcca ggagtcttgg 1260
ccaagaggtt gcaggtgaga gagtgtgtgg tactggggag ggggcaatgg actgagacca 1320
cctcacccag atgttctggt aggtttcttt gctaaaccaa gcatgctgca agcgcactgg 1380
atatttcagc agtgcacttg gctgaggaga aaatgatggt gaactgaaat gatatgacca 1440
gcctgaagcc aagaaaccag ggagttagag gcagaggcag gagcagaatc cagggtctgt 1500
aggctcatag aacttggaac tcctacaggt ggtgacatta ttcttccctt gcagaggggc 1560
accatgggct tctggaagtt cccccccttc ctgatcctca gcatcctggt cctgtaccaa 1620
gcaggaatgc tccatgccgc gccattcagg taagccagcc ctgccaggag ccctctcacc 1680
tccctcaacc cctgaaatct tagagttctg tgttgagtgg tactatgctg aatatggctc 1740
tctgtggggt tgtgggggtg tggggtcctg atgtacgaat gtaaacttgt atacaagtta 1800
atcagaaatg ttttaggagg ctatgtatca caaagtttac aaataaacaa aatatatagt 1860
acttgttatt tcatataacg cactgaacct cacagcatgc tgctattgct tttttctcaaa 1920
catttgtacc tttagcaaac ctatttacta atttcaccat actttgagca gtgggttaca 1980
tcctaatctg ctaattactt taccaataaa tttgttatta aatgtgatat gtggtccata 2040
catctaattt cttaccctca ttcaaattat attaagataa atatttttcat attcaaaacta 2100
tcattatcat ttattgttta ataatggctg tatttaacac taagctcata cagttcctga 2160
aaattaccat cagctttcaa aagcctatat gatccacctc cttcttttag 2220
gtcaccctag agcctaactc gtggtgaagc agcatttttg catgaatact ggcctcatgt 2280
cctgtctgtt gagtttggtt ggccacatcc tcagtggaag tggcagaaat gaggagtagg 2340
ggttggggta ggctcagcac atgttgggtt tgcttcccctt ccccaggatg gctttgggaa 2400
gcagctttga ttctgccaca ctcacggaag aggaaatgca cctcctactg gttgcaatgg 2460
tgaaggatta tgtgcagatg aaggccactg tgctggagca ggagacagag gacttcaggt 2520
cagtctctgc accccctccca gaatatggct taccctctcc cctggagtac caggaaggca 2580
tgcgcgtgtg catgcacatg cacactcaca cacacaggta ggagagagca cagctagaca 2640
ggcagcctgg ggcacaactc ttctacaggc tccactaaaa tcataggtca tgtggaagaa 2700
ccacagataa aaacattcct ttctgaaagc agtaggggaa gccgtgagat cacctacagt 2760
ggaaattttg tagcagtact tgggagacct cccagcactg gagtttagcc ttgtaaggta 2820
aagccaggga atgaatctca tgtatctcag gagattttag aaatttggct ccttctcgtt 2880
aacctgcccca tgatattctt tcacacctgc aaggcatctt cattgcacat ttgcaaggtg 2940
aagccagagc acttagaaaa gatgagtcag gtagagcagt ttctgaaata ggtctgaggc 3000
ctttagatgt gtagaatctg tggagatgtg catgttctca tggggccaga caccttttctc 3060
cagtcccaac tctctgtgca ctgagtttac tgttcatacc agctcctgac cgagctgtac 3120
ctgggcagag gcatgtgctg cacctttatc cgctctaaga acctctgtgc agagcataaa 3180
ggtctgagca gcatgtggaa tgccagaaaa ggtcgtccct ccccaccaca gcccttcccc 3240
acatcgcccct ggctcagtga acctctgcat cctcctaatg gaggatgcat gagccgccct 3300
cctgcttgcc ccctcctgcc tctgttccag gtcccccttc cctggtctaa ccttctgcat 3360
gactgcccctt gggggcagcc ctggtgcatg gtattgtctg gcatgtcttt tccctgcagc 3420
ctggacagct ccagagctaa gcagtgcaat aatctgagta cctgtgtgct gggaacatat 3480
acatgggacg tcaacaagtt ttatgcattc cccttaacta caactgggat tagagtatct 3540
ggcaagaaat gggtcagggc cagagtctca gagaaagtcc attatccctc aaggcagcat 3600
accctaaggt gcttaagaag gcccccaccc ctcctccttt ctagttcctc tcctagaatt 3660
tgcatgtgtt cttctctggt tgctctctga gctgctatca gcagctttcc ttgtggccat 3720
ggatgtctgg aatatcagag aggaggtggg gggtgggggc aggcaggcca gaagaaaatc 3780
(13)

```
actcaggaat agattaggag agaatgggca gccctgtgag tgcctgtgga tttcacagca 3840
gagcttctca gtcctgcttc tgaacatgct tttcactagg gaataaaagt atgtttctaa 3900
aaacacctga gctatagtgg ccatgtcaca tgcttcatgg atacagagac ttgtctgtca 3960
agtagcctta gtcctgggta gctggagtca gggcatggtg ggtggtccct ggagcaacct 4020
caagttgcaa aatcaggagc actaaggaac aaaacaagca cctctgggac ttgatgctac 4080
aaactcactt cctcttgcag gaagacaggg gaactttcct ttttctaagg agtactcagt 4140
acctctgaat gggaggcacc ttccagacaa gtccttaaga atggggttgg gtgtgccacc 4200
aaaatctctc tatgtcttgg ttaaatttta gtttacttgt acagaaaaga ttggctgtta 4260
aagttctgtg ttccttggct tgttgcccag agcacatttg ggttttctga cacctctgga 4320
aatgtctatg gagagtgatg atggcatttc cccaaaagcc ctatggtttt ctgttgggat 4380
tttgtgttta gcagaaacat ttcaggttca ctggtccctc tcagagctat aattttccac 4440
ggatggtcag tcctgggggg aagcacctgc cctcaggctc tcactgacag gccttctctt 4500
tgtctccatc ctgaaaatca gcatcaccac ccaggagaga tcctgcaaca ctgccatctg 4560
tgtgacccac aagatggcag gctggctgag cagatctggg agcgtggtta agaacaactt 4620
catgcccatc aacatgggct ccaaagtctt gggccggcgc cgcagacagc ctcaggcctg 4680
agctgtgaaa tgactctaaa aagaaggtga ctgctctaga acctggggta gcagggcaaa 4740
tggctgggta ttgcagaggt gctggccaca ctctaacctt ccgtgggcct gtattataaa 4800
aacatccaca gcaaaagggc caaccctagt gtccagagaa agaacagggt cccaagagct 4860
gaaatcccta gaatttggaa tcacttctat ttttttcagt ttctcccagt gattctgaga 4920
tcatctgcaa ggaaatatag atcctatgaa tttaaaacac tgttccctgc acttacaatt 4980
gccattgtag gttttgagtt ttaaaggtaa tgatcctatc caatgagttt gaagtatatc 5040
gtacaatgtc acgtacacct gaattcagag catagacttg gtttcaaatg tgatgtctgt 5100
cctctactaa ctatatgacc atgggccagg ccctctctgc gtctcagcct ctacatgtaa 5160
ttttaaggca aaaacagtat ctacctgtta ttgttaatat aaaaagtaat tgagataatt 5220
catggcaaga gcctcaacat taataaataa taatatccta gctcttgttt tttttttctc 5280
ctaggtcacc aagaagttga actcaagttg ctttcactgc aaagttgctt tccctgcaaa 5340
ttaaaagaac caatttgaaa aatagcatgg aagacacaca tatatgcatg cttcttgctt 5400
gaaatacaac tttttgcttg aaacaaacta aacctaaatg cagaataaaa tcattgcagt 5460
tacctgatgt gtatcttttt aatatttgat tctgtattct gtaagtatga ctcatgtctc 5520
actggcttat ctggtagcaa atctggaccc tgtcagccaa cctgttggtg gtggcagctc 5580
tgctaaacct caggagcaca tgaaattgct gccctatggg tgtctgggga tgcacagaaa 5640
tgttgagcct cagtggaacc tttaaagaaa tggtcttgga attcccatca tagctcagtg 5700
gaagcaaatc tgaccagcat cgataaggat gccggtttga tccatggcct tgcccattgg 5760
gtcaaggata tgttgttgcc atgagctgtg gtataggtta caggcgcagc tcagatctgg 5820
cattgctgtg gctgtggtat aggccagcag ctgcagctcc gattcaaccg ctagcctggg 5880
aacctccatg tgctgcaggt gcggccctaa aaagacagaa aaaagaaga gaaaaaaaaa 5940
tgttctcatt tgttcacttc atcaagccag aaaatgtatt ttcagtacac ttaaaaggag 6000
tccctgctgc tatttatgct gtttcccca taagaacctc agggacctgt gaacacttgg 6060
ttgaccaggt tgctcaaatg aggcaatatc gtgcttgggg tgggtcctca gtatcctgta 6120
ctctcagtgt ctagtgaaac atccttatgg gattagaatc ctctgcatct cagagagaca 6180
ttcacattct cagagggcac cctggttccc agccccagaa gttatctgtt ctctctctcc 6240
ttgactcagg tttgccctta tccatccctg cctttcctcc ccaacagctc ctctttacac 6300
atcctatagc ctgcaaaacc ctttagagca atggctcaca gcttgaaagg gtatcgcaga 6360
ctggcagacc tggaaaggtc ctcagatgcc atctaatcca acttttact cttgaagttg 6420
cagagaagga aaattatgtt gctcagggtc ctgcaataac tttatgagac atccctatat 6480
ttaagaaata ataattgagt gtctgctatc tctttgacac tatttaagct ccaggaatag 6540
agcaataaac agaacagaca aaacccctg cattcatgga gcttatattc taactggaag 6600
agactgaggt gatacatgct ctggaattag aaacattcag cactggaagg aatctgggat 6660
gtcataaggg tataaaggct tatttgatat agctatttca tgggatcaac atccctggca 6720
tatgctggca atgctggtta ccatctgttg actatgactt ccaaggtgac tggacagcca 6780
gtttcattgg tggacagtca attaagtggg atattttcca ttagagaagt catcccctac 6840
tacctacaga ttatagttat ttcctaagaa gcacatagaa ttatgaccct tctcccattc 6900
attctgtagt catcacagta acccaacctt agccataaag gtagatcaga ccatgtctcc 6960
cttaggacag aatactctat tatagactcc ccttctcaca aagtaaacat tttaggcatt 7020
gcagtgtctt cttaatcaac tctacttggt cagagtatat gtattaaaat ttacttccaa 7080
atttggaatt ccctggtggt taaggatcca ctagttctag agcggccgcc accgcggtgg 7140
ag                                  7142
```